

## CLAIMS

### WE CLAIM:

- 1 1. An electrical apparatus, comprising:  
2 at least one blade on an end of an interconnection element, said blade having a  
3 given length and oriented on the interconnection element such that said length runs  
4 substantially parallel to a horizontal motion of said blade relative to an electrical  
5 terminal.
- 1 2. The electrical apparatus of claim 1 wherein the horizontal motion of said blade  
2 occurs when said blade makes an electrical contact with the electrical terminal.
- 1 3. The electrical apparatus of claim 2 wherein said blade has a truncated pyramid  
2 cross-sectional structure.
- 1 4. The electrical apparatus of claim 2 wherein said blade has a sharpened edge  
2 along said length of said blade.
- 1 5. The electrical apparatus of claim 4 wherein said blade has a cross-sectional  
2 structure with a front edge at a first end of said length of said blade and a back edge at  
3 a second end of said length of said blade.
- 1 6. The electrical apparatus of claim 5 wherein said front and back edges are  
2 rectilinear.
- 1 7. The electrical apparatus of claim 5 wherein said front and back edges are  
2 pyramidal.

1 8. The electrical apparatus of claim 5 wherein said front and back edges have two  
2 sides such that said blade has a hexagonal shape.

1 9. A tip structure, comprising:  
2 a foot having an upper and a lower surface; and,  
3 at least one blade on said upper surface of said foot, said blade having a given  
4 length and oriented on said foot such that said length runs substantially parallel to a  
5 horizontal motion of said foot.

1 10. The tip structure of claim 9 wherein the horizontal motion of said foot occurs  
2 when said tip structure makes an electrical contact with an electrical terminal.

1 11. The tip structure of claim 9 further comprising a resilient contact element coupled  
2 to said lower surface of said foot.

1 12. The tip structure of claim 9 wherein said blade has a sharpened edge along said  
2 length of said blade.

1 13. The tip structure of claim 12 wherein said blade has a primary edge at a front  
2 end of said blade and a trailing edge at a back end of said blade.

1 14. The tip structure of claim 12 having a first and a second blade on said upper  
2 surface of said foot.

1 15. The tip structure of claim 14 wherein said first and second blades are joined by a  
2 bridge.

1 16. The tip structure of claim 14 wherein said first and second blades are in a  
2 juxtaposed position.

1 17. The tip structure of claim 12 wherein said blade has a triangular cross-sectional  
2 structure with a front edge at a first end of said length of said blade and a back edge at  
3 a second end of said length of said blade.

1 18. The tip structure of claim 17 wherein said front and back edges are rectilinear.

1 19. The tip structure of claim 17 wherein said front and back edges are pyramidal.

1 20. The tip structure of claim 17 wherein said front and back edges have two sides  
2 such that said blade has a hexagonal shape.

1 21. A tip structure, comprising:  
2 a foot having an upper and a lower surface; and,  
3 at least one blade on said upper surface of said foot, said blade having a given  
4 length and oriented on said foot such that said length is within approximately  $\pm 45^\circ$  of an  
5 axis parallel to a horizontal motion of said foot.

1 22. The tip structure of claim 21 wherein said blade has a sharpened edge along  
2 said length of said blade.

1 23. The tip structure of claim 22 having a first and a second blade on said upper  
2 surface of said foot.

1 24. The tip structure of claim 23 wherein said first and second blades are joined by a  
2 bridge.

1 25. The tip structure of claim 23 wherein said first and second blades are in a  
2 juxtaposed position.

1 26. The tip structure of claim 22 wherein said blade has a triangular cross-sectional  
2 structure with a front edge at a first end of said length of said blade and a back edge at  
3 a second end of said length of said blade.

1 27. The tip structure of claim 26 wherein said front and back edges are rectilinear.

1 28. The tip structure of claim 26 wherein said front and back edges are pyramidal.

1 29. The tip structure of claim 26 wherein said front and back edges have two sides  
2 such that said blade has a hexagonal shape.

1 30. An electrical contact structure comprising:  
2 a plurality of interconnection elements disposed in relationship with one another;  
3 a plurality of tip structures affixed to respective ones of said interconnection  
4 elements, each of said tip structures further comprising:  
5 at least one blade on a contact point of a respective one of said  
6 interconnection elements, said blade having a given length and oriented on the  
7 respective one of said interconnection elements such that said length runs substantially  
8 parallel to a horizontal motion of the respective one of said interconnection elements  
9 when the respective one of said interconnection elements makes an electrical contact.

1 31. The electrical contact structure of claim 30 wherein the horizontal motion of said  
2 foot occurs when said tip structure makes electrical contact with an electrical surface.

1 32. The electrical contact structure of claim 31 wherein said blade has a sharpened  
2 edge along said length of said blade.

1 33. The electrical contact structure of claim 32 wherein said blade has a triangular  
2 cross-sectional structure with a front edge at a first end of said length of said blade and  
3 a back edge at a second end of said length of said blade.

1 34. The electrical contact structure of claim 33 wherein said front and back edges  
2 are rectilinear.

1 35. The electrical contact structure of claim 33 wherein said front and back edges  
2 are pyramidal.

1 36. The electrical contact structure of claim 33 wherein said front and back edges  
2 have two sides such that said blade has a hexagonal shape.

1 37. A method of making an electrical contact structure, comprising the steps of:  
2 forming a trench in a sacrificial substrate;  
3 depositing at least one layer of at least one conductive material in said trench to  
4 form a blade having a given length, an upper surface, and a lower surface; and,

5 coupling an interconnection element to said lower surface of said blade, wherein  
6 said blade is oriented such that said length of said blade runs substantially parallel to a  
7 horizontal motion of said blade.

1 38. The method of claim 37 further comprising the step of releasing said blade from  
2 said sacrificial substrate.

1 39. The method of claim 38 wherein said step of releasing said blade from said  
2 sacrificial substrate further comprises releasing said blade from said sacrificial substrate  
3 by a process selected from the group consisting of heat and chemical etching.

1 40. The method of claim 37 wherein said step of forming a trench further comprises  
2 etching a trench in a substrate with a potassium hydroxide selective etch.

1 41. The method of claim 40 wherein said step of etching a trench further comprises  
2 etching a trench in a substrate with a potassium hydroxide etch between the 111 and  
3 001 crystal orientation.

1 42. The method of claim 37 wherein said step of forming a trench further comprises  
2 forming a trench in a substrate, wherein said trench has a triangular cross-section.

1 43. The method of claim 37 wherein said step of forming a trench further comprises  
2 forming a trench in a substrate, wherein said trench has a truncated pyramid cross-  
3 section.

1 44. The method of claim 37 wherein said step of coupling said interconnection  
2 element to said lower surface of said blade further comprises soldering said  
3 interconnection element to said lower surface of said blade.

1 45. The method of claim 37 wherein said step of coupling said interconnection  
2 element to said lower surface of said blade further comprises brazing said  
3 interconnection element to said lower surface of said blade.